VisualCommander for Rapid End-to-End Mission Design and Simulation, Phase I

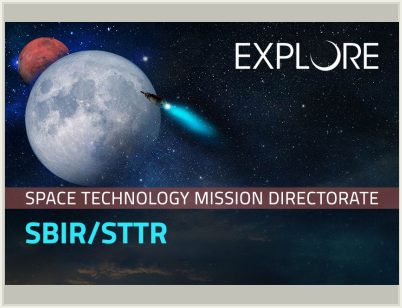
Completed Technology Project (2009 - 2009)

Project Introduction

This proposal is for the development of a highly extensible and user-configurable software application for end-to-end mission simulation and design. We will leverage the plug-and-play architecture of our existing simulation, visualization and command software, developing new capabilities for data fusion, operations planning, plan validation, and adjustable automation. The core application, VisualCommander, has been developed over the last 4 years under SBIR and IR&D funding as a revolutionary way of providing integrated design and simulation from mission conception through mission operations. The software design of VisualCommander (VC) has been driven by the goals of extensibility, re-use of functionality, and user-configurability. As such, it serves as an ideal foundation upon which to build additional in-depth functions that are valuable for this purpose. VisualCommander is designed to integrate legacy engineering software with user-generated design and simulation tools into a single, user-friendly environment. It automates the flow of data between analysis, design, and simulation applications with minimal user manipulation.

Anticipated Benefits

Potential NASA Commercial Applications: This end-to-end mission design and analysis tool is applicable to a wide range of NASA, military and civilian applications. For example, the DoD has a major effort in the area of responsive space with the goal of reducing the time needed to fly a spacecraft. This product would be ideal for this type of application. The underlying value of the tool is that it will provide an organized interface for connecting many different parts of a project. For NASA, Air Force, ESA, and other space-faring organizations, the application realm is spacecraft and mission design, simulation and analysis. However, the core functionality that bridges multiple software tools into a single environment has a broad scope of potential applications. Further development beyond Phase II could adapt the tool to address additional technology areas with a need for multi-phase design integration, such as civil engineering, automotive design, and robotics.



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Small Business Innovation Research/Small Business Tech Transfer

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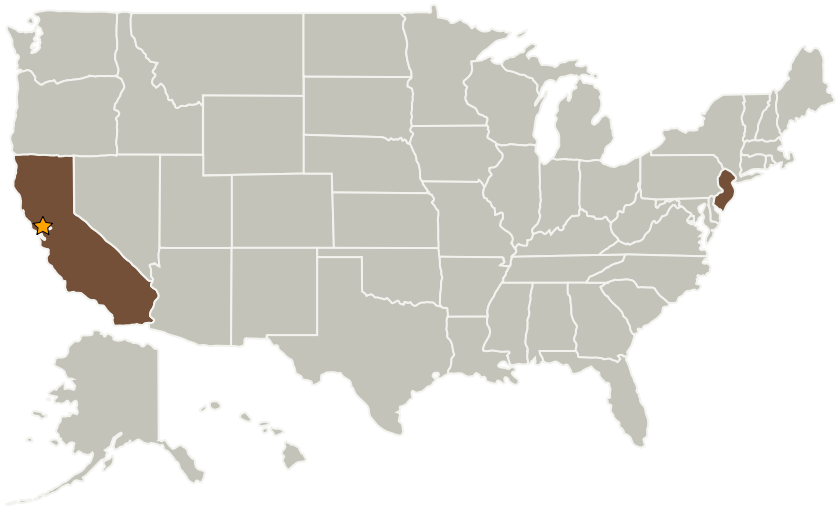
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Princeton Satellite Systems	Supporting Organization	Industry	Plainsboro, New Jersey

Primary U.S. Work Locations	
California	New Jersey

Project Transitions

January 2009: Project Start

July 2009: Closed out

Closeout Summary: VisualCommander for Rapid End-to-End Mission Design an d Simulation, Phase I Project Image

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

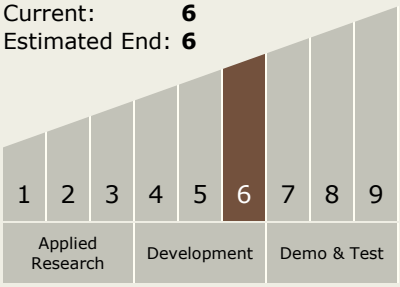
Carlos Torrez

Principal Investigators:

Joseph B Mueller
Philip J Ballou

Technology Maturity (TRL)

Start: **6**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.3 Mission Operations and Safety
    - TX07.3.1 Mission Planning and Design